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# *USER'S GUIDE*

**Model Number: HDB4-AT-CT-A**

**Part Number: CS11-1038**

HUBBELL

HIPOTRONICS®
THE MEASURE OF A LEADER

ROBINSON INSTRUMENTS

**DANGER**

**HIGH VOLTAGE**

**WARNING! This publication describes a product engineered and designed to measure or operate with HIGH VOLTAGES. Accordingly, maximum safeguards have been built into the equipment and the best safety techniques possible are described in the unit's operating instructions. These instructions caution the user to exercise great care when using certain controls at appropriate points in the operating procedures. In addition to following these written warnings, the operator of this equipment is strongly advised to maintain safety consciousness. The following rules are particularly relevant and must be followed at all times.**

- ◊ GROUND THE SYSTEM BEFORE CONNECTING INPUT POWER
- ◊ DISCONNECT POWER BEFORE UN-GROUNDING THE SYST
- ◊ NEVER APPROACH OR TOUCH A POTENTIALLY LIVE H VOLTAGE CIRCUIT WITHOUT SOLIDLY CONNECTING APPROPRIATE GROUND CONDUCTOR FIRST.

MP MASTER
MA35493

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## About the User's Guide

This user's guide describes functions and features of the HIPOTRONICS AT Series of Hipot Testers, including Model HA3-AT-CT (an AC unit) and Model HDB4-AT-CT (a DC unit). It is intended to provide a simplified reference for users of this equipment, allowing the quick, safe, and efficient use of the unit's features.

Specific information for the model purchased includes a diagram of the front panel, a parts list, and a schematic diagram.

### Before You Begin

It is assumed that the user has a basic understanding of electrical equipment and the functions to be performed by this unit. ***Only trained, qualified personnel should operate this equipment.***

**Note:** Since these test sets are designed to test a variety of products, these products will be referred to as *test samples* throughout this user's guide. For a list of common applications for production testing, see the section of this user's guide titled *Features and Specifications* on Page 2.

### Organization of this User's Guide

This user's guide is divided into four major sections, including:

- **General Information**, which discusses the features and specifications of the HIPOTRONICS AT Series of Hipot Testers, and provides a description of the functions performed by each of the controls and indicators on the front panel.
- **Setting Up the Equipment**, which provides instructions for preparing the unit for test operations.
- **Operating the Equipment**, which provides instructions for performing test operations.
- **Performing Special Operations**, which provides procedures for recalibrating the unit and performing maintenance.

### Related Publications

The functions, features, and specifications of HIPOTRONICS AT Series of Hipot Testers are discussed in Section 1 of the HIPOTRONICS Product Catalog.

## General Information

This section acquaints the user with the major features and specifications of the AT Series of Hipot Testers and the functions performed by each of the controls and indicators on the front panel.

### Features and Specifications

The AT Series of Hipot Testers performs AC or DC Hipot testing, depending upon the model purchased. *Hipot testing* is the process of testing the dielectric strength of insulation at a chosen voltage by measuring the amount of leakage current through the insulation. These units also perform wire continuity checking, ensuring that good continuity exists in the two conductor wires and in the ground wire from the plug to the test sample. The units are designed to meet most UL, CSA, VDE, IEC, MIL, BSI, and other industry standards for dielectric strength testing.

Typical applications for production testing are:

- Medical Devices
- Appliances
- Computer Equipment
- Lighting Fixtures and Lamps
- Telecommunications Equipment
- Industrial Control Equipment
- Wire and Cable
- Automotive System Components

Standard features of the AT Series of Hipot Testers include:

- Recessed, twist lock high voltage re-entrant connection to minimize user accessibility to high voltage and prevent the output lead from being accidentally removed from the HV output connection.
- Interlock provision to allow easy installation of a safety switch into the interlock circuit. Breaking this circuit prohibits the generation of high voltage.
- Adjustable overload setpoint with visual and audible indicators to protect the user and the test sample from excess current levels by shutting down the high voltage instantly.
- Voltage setpoint to ensure that the same test voltage is reached each time, providing consistency in the test results.
- Remote high voltage receptacle to allow hipot testing and third wire ground continuity testing directly from the power supply cord of the test sample. When testing portable electric lamps, the continuity test socket allows continuity and short testing of the lamp circuitry.
- Timer to allow for consistency in the time the voltage is applied. This timer is internally adjustable from 0.5 to 5 seconds.
- Manual reset.
- Output connected voltmeter to ensure accurate output voltage readings, independent of the test load.

In addition, the following accessories are available:

- Safety test cabinet to eliminate user exposure to high voltage during testing. The interlocked test cage door shuts off high voltage when the door is opened.
- Retractable test probe to allow exposure of high voltage only when the voltage is to be applied to the object under test.
- Fixed test probe to allow the easy application of high voltage to the object under test.

Figure 1 lists the specifications for the models in the series.

| **Input:** | **115 V ac, 50/60 Hz, 3 Amp.** | | | |
|---|---|---|---|---|
| **Meter:** | **4" Meter, 2 percent scale accuracy** | | | |
| **Model Numbers** | | **Output Voltage** | | **Voltmeter Range (kV)** |
| **AC** | **DC** | **AC (Volts)** | **DC (Volts)** | |
| HA3-AT-CT | | 0-3000 | | 0-3 |
| | HDB4-AT-CT | | 0-4000 | 0-4 |

**Figure 1** *HIPOTRONICS AT Series Hipot Testers Specifications*

## Controls and Indicators

A diagram of the front panel for the AT Series of Hipot Testers is displayed in Figure 2. Refer to this diagram, as well as to the front panel itself, when reading the description of the controls and indicators. ***Note that the front panel displayed in Figure 2 may differ slightly from that of the model purchased.***

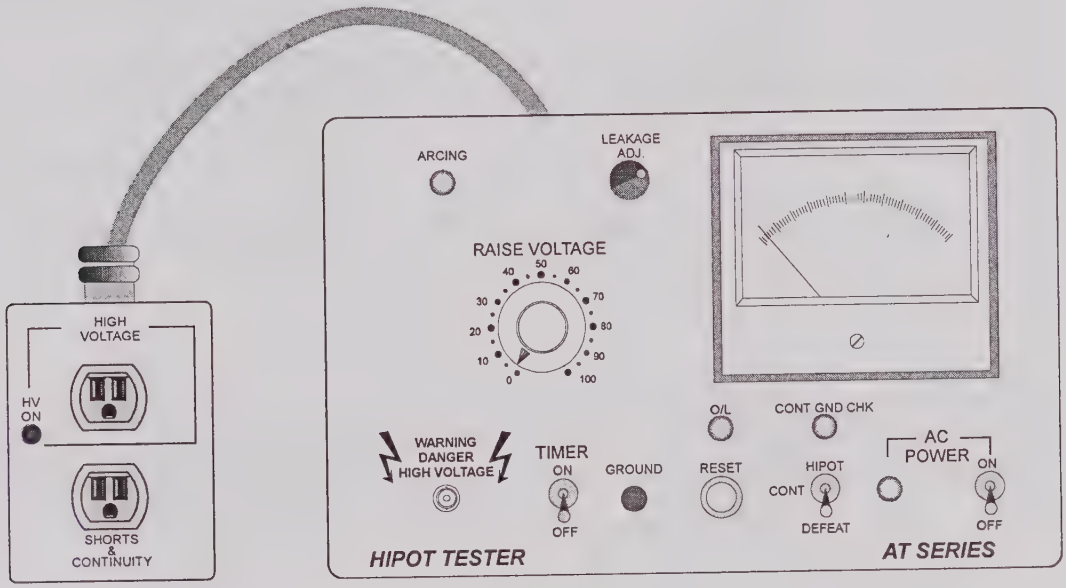


**Figure 2** *AT Series of Hipot Testers Front Panel*

### AC Power

The **AC POWER** toggle switch provides the input power connection to the variable autotransformer, which controls output voltage and supplies output power. The associated indicator lights when the **AC POWER** is ON.

### Raise Voltage

The **RAISE VOLTAGE** control is used to regulate the output voltage. Markings on the **RAISE VOLTAGE** control indicate the percentage of the unit's maximum output voltage.

### Voltmeter

The average responding voltmeter is RMS calibrated and is connected through a high impedance resistive divider to the output. This resistor represents a current source for the metering circuit. The high voltage output is indicated in kilovolts.

### Leakage Adjust

The **LEAKAGE ADJ** control provides the means for limiting leakage current from the test sample. The leakage current can be adjusted from 500 $\mu$A (maximum sensitivity) to 5 mA (minimum sensitivity).

### Overload Indicator

The **O/L** indicator lights when there is excessive leakage current during a test. To clear an overload, press the **RESET** pushbutton before resuming test procedures.

### Arcing Indicator

The **ARCING** indicator lights when arcing or electrical breakdown is detected in the test sample.

### Timer

This toggle switch activates the variable timer, which controls the amount of time high voltage is supplied to the test sample. The timer is factory adjusted for a one-second test but may be reset for a different time interval (see the section of this user's guide titled *Setting Up the Equipment*).

### HV Output Connection

A supplied high voltage test lead or an optional probe may be connected to the HV output connection to supply high voltage to the test sample. This connection is located in the lower left-hand corner of the front panel and is marked ***High Voltage***.

### Mode Selector

The 3-position toggle switch indicates the desired test mode. When the switch is in the **CONT** position, tests may be made for shorts and continuity (this test mode is used exclusively for testing lamps). When the switch is in the **HIPOT** position, a ground wire continuity check is performed between the third wire ground and exposed metal on the test sample. If this test is passed, high voltage may be activated and a Hipot test performed. When the switch is in the **DEFEAT** position, a Hipot test may be performed without first performing a ground wire continuity check (for items that do not have a 3-wire grounding plug). See the section of this user's guide titled *Operating the Equipment* for further information about performing specific tests.

### CONT GND CHK Indicator

When performing a shorts and continuity test, this indicator lights to verify that a short exists from conductor to conductor. When performing a ground wire continuity check, this indicator lights when good continuity exists. When the **MODE** selector is in the **DEFEAT** position, this indicator lights to verify that the continuity test is disabled.

### Test Receptacle

The test receptacle attached to the unit contains two electrical sockets marked **HIGH VOLTAGE** and **SHORTS & CONTINUITY**. These electrical sockets are used to plug in the test sample for the related tests. Also located on this receptacle is the **HV ON** pushbutton, which activates high voltage to the test sample.

## Setting Up the Equipment

This section provides instructions for preparing the test set for use and for preparing a test sample.

1. Plug the test set into a grounded, 115 V ac, 60 Hz outlet. If the third grounding prong is *not* used, ground the pigtail of the two prong adapter.

2. Attach the supplied ground test lead to the **GROUND** post on the front panel. Attach the alligator clip on the other end of the ground test lead to the casing of the test sample. If the test sample has more than one metal part that is not electrically connected to the other, use jumper leads to connect them. When performing a ground wire continuity check, however, individually test each exposed metal part of the test sample.

   Connect the high voltage test lead to the HV output connection only if the test sample *cannot* be plugged into the **TEST RECEPTACLE**.

> ***Warning!!***
> ***Do not touch the test leads while a test is being conducted.***

3. Switch the **AC POWER** ON. The associated indicator lights.

4. Set the **LEAKAGE ADJ** control on the front panel to a value between 500 μA and 5 mA. To determine the setting, do the following:

   a) Determine the value of leakage current (between 500 μA and 5 mA) to be used as a go/no-go current level (overload sensitivity). This current is called the *Itrip*.

   b) Choose an available resistor with a value between 200 V/*Itrip* and 1000 V/*Itrip* with a minimum power rating of 50 watts. This resistor is called the *Rtrip*.

   c) Switch the **TIMER** OFF.

   d) Select **DEFEAT** with the **MODE** selector.

   e) Turn the **RAISE VOLTAGE** control to its lowest setting.

   f) Turn the **LEAKAGE ADJ** control fully clockwise (maximum setting).

   g) Connect this resistor (*Rtrip*) between the high voltage test lead and the ground test lead.

   h) Press and hold the **HV ON** pushbutton and turn the **RAISE VOLTAGE** control until the **HV OUTPUT** meter reads the value calculated by multiplying *Itrip* times *Rtrip*.

   i) Slowly turn the **LEAKAGE ADJ** control counterclockwise until the unit trips.

5. Reset the timer, if necessary to the desired test time duration. To reset the timer, do the following:

   a) With the power cord unplugged, remove the back panel of the unit.
   b) Plug in the unit and turn the **AC POWER** ON.
   c) Turn the **RAISE VOLTAGE** control to its *lowest* setting.
   d) Switch the **TIMER** ON, then press the **HV ON** pushbutton.
   e) With a small screwdriver, turn the potentiometer located below the blue timer circuit in the back of the unit.
   f) When the timer completes its cycle, press and release the **HV ON** pushbutton to reactivate the timer. It may be necessary to repeat this step until the desired testing time is set.
   g) Turn off the power, unplug the unit, and replace the back panel.

*Note: **The timer circuit may be bypassed by switching the** **TIMER** OFF.*

6. Set the test voltage by doing the following:

   a) Switch the **TIMER** OFF.
   b) Select **DEFEAT** with the **MODE** selector.
   c) Press and hold the **HV ON** pushbutton and select the desired voltage with the **RAISE VOLTAGE** control, as displayed on the voltmeter.
   d) Release the **HV ON** pushbutton.

*Note: **Perform Step 6 only when the test set is first energized. When the** **HV ON** **pushbutton is pressed, voltage is applied to the test sample and displayed on the voltmeter.***

7. Plug the line cord of the test sample into the **HIGH VOLTAGE** socket of the **TEST RECEPTACLE** and clip the ground test lead to the "low" end (the exposed dead metal or accessible low voltage metal parts) of the test sample.

If the test sample *does not* have a line cord, connect the "low" end of the to the ground lead of the hipot tester. Connect the "high" end of the sample (the live, current carrying components) to the HV output connection using the supplied high voltage test lead. Proceed with the Hipot test. ***If using this method, ensure that nothing is plugged into the** **TEST RECEPTACLE** **sockets.***

## Operating the Equipment

This section provides step-by-step instructions for performing tests. Prior to performing these tests, complete all the procedures described in the section of this user's guide titled *Setting Up the Equipment*.

### Performing a Ground Wire Continuity Check

The Ground Wire Continuity Check is performed to determine if there is continuity between the ground pin of the power supply cord and the exposed metal of the test object. To perform a Ground Wire Continuity check, do the following:

1. Plug the test sample into the **TEST RECEPTACLE** socket marked **SHORTS & CONTINUITY.**
2. Switch the **MODE** selector to **HIPOT**.
3. Touch each exposed metal part of the test sample with the end of the ground test lead while watching the **CONT GND CHK** indicator. If this indicator *does not* light as the test is being performed, there is a break in the ground wire. If the indicator lights, a Hipot test may be performed after all the exposed metal parts are tested.

### Performing a Hipot Test (Dielectric Withstand Test)

The purpose of the Hipot Test is to verify the insulation integrity of the test object. There are three procedures for performing a hipot test, depending on the nature of the test object:

#### Performing a Hipot Test on Test Objects with a 3-pin Plug Power Supply Cord (Third Wire Ground Continuity Test Required)

1. If the timer is to be used, turn the **TIMER** toggle switch ON.
2. Switch the **MODE** selector to **HIPOT**.
3. Ensure that the Third Wire Ground Continuity Test has been performed and passed.
4. Plug the test sample into the **TEST RECEPTACLE** socket marked **HIGH VOLTAGE**. ***Ensure that the high voltage test lead is not plugged into the*** **HV OUTPUT** ***connection on the front panel.***
5. Clip the ground lead connected to the **GROUND** post on the test unit to exposed dead metal on the test object.
6. Press and hold the **HV ON** pushbutton on the **TEST RECEPTACLE**. If the **TIMER** is being used, the high voltage will turn off after the test time is completed. If the timer is *not* being used, release the **HV ON** pushbutton when the test time has elapsed.

7. Note the **O/L** (overload) indicator. If the leakage current exceeds the preset value set by the **LEAKAGE ADJUST** control, an overload buzzer sounds and the **O/L** indicator lights. If an overload occurs, press the **RESET** pushbutton to reset the unit and proceed to the next test.

**Performing a Hipot Test on Test Objects without a 3-pin Plug Power Supply Cord (No Third Wire Ground Continuity Test Required)**

1. If the timer is to be used, turn the **TIMER** toggle switch ON.
2. Switch the **MODE** selector to **DEFEAT**.
3. Plug the test sample into the **TEST RECEPTACLE** socket marked **HIGH VOLTAGE**. ***Ensure that the high voltage test lead is not plugged into the* HV OUTPUT *connection on the front panel.***
4. Clip the ground lead connected to the **GROUND** post on the test unit to exposed dead metal on the test object.
5. Press and hold the **HV ON** pushbutton on the **TEST RECEPTACLE**. If the **TIMER** is being used, the high voltage will turn off after the test time is completed. If the timer is *not* being used, release the **HV ON** pushbutton when the test time has elapsed.
6. Note the **O/L** (overload) indicator. If the leakage current exceeds the preset value set by the **LEAKAGE ADJUST** control, an overload buzzer sounds and the **O/L** indicator lights. If an overload occurs, press the **RESET** pushbutton to reset the unit and proceed to the next test.

**Performing a Hipot Test on Test Objects with No Power Supply Cord**

1. If the timer is to be used, turn the **TIMER** toggle switch ON.
2. Switch the **MODE** selector to **DEFEAT**.
3. Plug the high voltage test lead into the **HV OUTPUT** connection on the front panel and clip it to the current carrying components of the test object.
4. Clip the ground lead connected to the **GROUND** post on the test unit to exposed dead metal on the test object. Alternately, the ground led may be clipped to another conductive piece of metal on the test object that is electrically isolated from the current carrying components.
5. Press and hold the **HV ON** pushbutton on the **TEST RECEPTACLE**. If the **TIMER** is being used, the high voltage will turn off after the test time is completed. If the timer is *not* being used, release the **HV ON** pushbutton when the test time has elapsed.

6. Note the **O/L** (overload) indicator. If the leakage current exceeds the preset value set by the **LEAKAGE ADJUST** control, an overload buzzer sounds and the **O/L** indicator lights. If an overload occurs, press the **RESET** pushbutton to reset the unit and proceed to the next test.

### Performing a Shorts Test

The purpose of the Shorts Test is to determine if a short exists between the "hot" and "neutral" conductors of the power supply cord of the test object.

1. Plug the test sample into the **TEST RECEPTACLE** socket marked **SHORTS & CONTINUITY**.
2. Switch the **MODE** selector to **CONT**.
3. Note the **CONT GND CHK** indicator. If this indicator lights, there is a short from conductor to conductor.

### Performing a Continuity Test (Lamps Only)

The Continuity Test verifies continuity for both the "hot" and "neutral" conductors of a lamp.

1. Plug the lamp into the **TEST RECEPTACLE** socket marked **SHORTS & CONTINUITY**.
2. Switch the **MODE** selector to **CONT**.
3. Insert the metal end of a continuity probe (also referred to as a shorting bar) into the empty bulb socket of the lamp and switch the lamp on.
4. If there is good continuity from the plug to the light socket, the buzzer will sound. If the buzzer does not sound, there is a break in one or both of the conductors.

## Performing Special Operations

This section provides step-by-step procedures for meter recalibration and suggestions for maintaining the equipment.

### Meter Recalibration

HIPOTRONICS meters have been calibrated with standards traceable to national standards maintained by the National Institute of Standards and Technology (NIST) in Washington, DC and are certified accurate to within 2 percent when shipped. Perform meter recalibration as often as necessary to meet the requirements of each particular installation, as dictated by usage and standards for accuracy. Three factors influence the frequency of meter calibration: the amount of physical handling, time lapse, and extent of usage. Intervals between meter recalibration can vary from one month to one year.

#### Recalibrating the Voltmeter

1. ***Ensure the unit is properly grounded.***
2. Connect a HIPOTRONICS standard kilovoltmeter between the high voltage lead and **GROUND**.
3. Turn **AC POWER** ON.
4. Turn the **TIMER** OFF.
5. Turn the **RAISE VOLTAGE** control until the external voltmeter reading is 2 kV for ac units and 3 kV for dc units.
6. Adjust the voltmeter calibration potentiometer until the unit's meter reading equals the reading on the external meter.

### Performing Maintenance

#### Cleaning the Equipment Surfaces

Clean the painted surfaces and front panel with a damp cloth and a mild detergent, ensuring that the solution does not come in contact with the electrical circuitry. Clean meter faces and acrylic parts with a residue-free, commercial grade glass cleaner. Periodically, the interior of the unit should be blown out with water-free, filtered compressed air. This prevents dust build-up and extends the operating life of the equipment.

#### Cleaning the Meter Faces

When a meter acts erratically, clean the face with an anti-static solution such as Crown™ or Statnul ™.

# Warranty

HIPOTRONICS® THE MEASURE OF A LEADER

HIPOTRONICS, INC. warrants to the original purchaser of any new merchandise that the merchandise is free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of shipment. The obligation of Hipotronics, Inc. under this warranty is limited, in its exclusive option, to repair, replace or issue credit for parts or materials which prove to be defective, and is subject to Purchaser's compliance with the Hipotronics, Inc. Warranty Claim Procedure as set forth below. The happening of any one or more of the following events will serve to void this warranty and any defect or damage resulting therefrom is specifically excluded from Warranty coverage:

(a) defects due to accident, negligence, alteration, modification, faulty installation, abuse or misuse by Purchaser or Purchaser's agents or employees.

(b) attempted or actual dismantling, disassembling, service or repair by any person, firm or corporation not specifically authorized in writing by Hipotronics, Inc.

(c) defects caused by or due to handling by carrier or incurred during shipment, transshipment or other move.

This Warranty covers only those parts and/or materials deemed by Hipotronics, Inc. to be defective within the meaning of this Warranty. The liability of Hipotronics, Inc. shall be limited to the repair, replacement or issuance of credit for parts deemed defective within the meaning of this Warranty. Costs incurred by purchaser for labor or other expenses incidental to the inspection, repair, replacement or issuance of credit for such parts and/or materials shall be the sole responsibility of purchaser. This Warranty shall not apply to any accessories, parts or materials not manufactured or supplied by Hipotronics, Inc. and if, in the sole discretion of Hipotronics, Inc., Purchaser's claim relates to any materials of a component part, or of the manufacturer of a device of which the defective part is a component, Hipotronics, Inc. reserves the right to disclaim liability under this Warranty and to direct that the Purchaser deal directly with such supplier or manufacturer. Hipotronics, Inc. agrees to assist the purchaser in processing or settling any such claim without prejudicing its position as to liability.

## Warranty Claim Procedure

Compliance with the following Warranty Claim Procedure is a condition precedent to the obligation of Hipotronics, Inc. under this Warranty.

(a) Purchaser must notify Hipotronics, Inc. in writing by certified or registered mail, of the defect claimed within twelve (12) months after the date of original shipment. Said notice shall describe in detail the defect, the defective part and the alleged cause of the defect.

(b) At the exclusive option of Hipotronics, Inc., Purchaser shall dismantle or disassemble at Purchaser's cost and expense and shall ship the defective part or material, prepaid, to Hipotronics, Inc., Brewster, New York 10509, for inspection, or permit an authorized service representative of Hipotronics, Inc. to inspect the defective part or material at the Purchaser's premises. Purchaser shall provide facilities for, and at Purchaser's cost and expense, dismantle, disassemble, or otherwise make accessible the subject part or material whether or not same is a component of, or installed in, a device other than that manufactured or supplied by Hipotronics, Inc. If disclosure shows that the defect is not one for which Hipotronics, Inc. is liable, the Purchaser agrees to reimburse Hipotronics, Inc. for all expense incurred.

(c) Upon receipt of the defective part or material, or after access to same, Hipotronics, Inc. shall inspect the part or material to determine the validity of Purchaser's claim.

The validity of any Warranty Claim, Purchaser's compliance with Hipotronics, Inc. Warranty Claim Procedure, the obligation to either repair, replace or issue credit, or direct the purchaser to deal directly with a manufacturer or supplier are to be determined solely and exclusively by Hipotronics, Inc. any determination so made shall be final and binding.

**THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ON THE PART OF HIPOTRONICS, INC., INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH THEREOF AND HIPOTRONICS, INC. NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM OR CORPORATION TO ASSUME ANY LIABILITY OR OBLIGATION IN CONNECTION WITH THIS SALE ON ITS BEHALF AND PURCHASER ACKNOWLEDGES THAT NO REPRESENTATIONS EXCEPT THOSE MADE HEREIN HAVE BEEN MADE TO PURCHASER.**

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# *Warranty*

## *Returned Material*

If it should become necessary to return the equipment described in this publication to the factory, the Service Department of HIPOTRONICS, INC. must be contacted at (914) 279-8091. If the return of the unit is appropriate, a Return Authorization Number will be issued and you will be instructed as to the method of return. If return of the unit is *not* advisable, other inspection arrangements will be made.

Please have the following information available to help our service personnel identify the unit and determine the necessity for return.

*Note:* **Material received at this plant without the proper authorization shall be held as "customer's property" and no service will be performed until the proper steps have been taken. Your cooperation is requested in order to ensure prompt service.**

MODEL: _____

SERIAL NUMBER: _____

TYPE (Part Number): _____

***(The MODEL, SERIAL NUMBER and TYPE are indicated on the black and silver tag affixed to the unit.)***

REASON FOR RETURN: _____

_____

_____

DEFECT: _____

_____

_____

## *Replacement Parts*

To order replacement parts for this unit, please refer to the Parts List provided with this publication. Provide the number of the specific component along with the *type* (Part Number) of the unit, which is indicated on the Parts List and on the black and silver tag affixed to the unit.

ITEM # : 99-98-0065 DESCRIPTION : HDB4-AT-CT SALES ORDER # : 02/89
MFG PART # : CS11-1038 DATE CREATED :
CUSTOMER :

| REF#/LN# | PART # / DATA3 # | QTY | UNIT | DESCRIPTION | MFG PART # |
|---|---|---|---|---|---|
| | 19-99-0111 | 1.00 | EA | SUBASSEMBLY,OVERLOAD CIRCUIT | CS60-111 |
| | 25-15-0100 11275 | 1.00 | EA | BINDING POST BRASS 1518 | 1518 |
| | 09-BA29-13 | 1.00 | EA | HV BUSHING 2 1/2" LONG | BA29-13 |
| | 07-70-0100 13180 | 1.00 | EA | BUZZER AI-293 =TO BU120 | BU1031,BU120 |
| | 99-99-0500-01 | 1.00 | EA | 7 X 12 METER CASE | |
| | 01-01-3900 12919 | 1.00 | EA | CAP 2500 pf 30 KV 715C009252D8303FN | 715C009252D8303FN |
| | 18-11-3540 15523 | 1.00 | EA | DD11-354 ALUM. CHASSIS FOR HA SERIES HIPOTS | DD11-354 |
| | 99-99-0500-14 | 1.00 | EA | UNIVERSAL FRONT PANEL | |
| | 05-35-0650 10027 | 1.00 | EA | FUSE 3 A 250 V | 3AG |
| | 05-37-0400 10005 | 1.00 | EA | FUSE HOLDER 1 POS. (#357001) | BUSS#357001,KEYSTONE#3523 |
| | 25-10-0700 14233 | 1.00 | EA | CONNECTOR INSULATOR RED | 62 |
| | 23-70-0100 13301 | 1.00 | EA | KNOB W/DOT 5/8" | 1E2B |
| | 23-70-0200 13302 | 1.00 | EA | KNOB SKIRTED 1-1/8" | 1F2B |
| | 52-02-0360 12658 | 1.00 | EA | 18/3 MULTI CABLE,LINE CORD 8' .328 OD,SJT,AMER.ELEC.#6501-8 | 6501-8 |
| | 13-05-1150 12892 | 1.00 | EA | MET PAN 0-50uA 4 1/2 BAR RING MODEL #7045-50UA | N520820050 |
| | 11-20-0100 10044 | 3.00 | EA | 3600 LEECRAFT CLEAR NEON. | 36N2317 |
| | 11-20-0150 10045 | 1.00 | EA | INDICATOR TINCON 125-250V RED 3600 LEECRAFT RED NEON | 36N2311 3600 |
| | 07-15-0600 11433 | 1.00 | EA | RELAY DPDT 115 V | MKT02A,RE731 |
| | 21-45-2100 10557 | 1.00 | E | RESISTOR 250 K 50 W 70/50FC250V | 70/50FC250V |
| | 21-23-0700 10250 | 1.00 | EA | RESISTOR 50 MEG 3 W 15% | |
| | 20-25-0850 10201 | 1.00 | EA | POT 2.5 K OHM 2 W N-L | |
| | 20-05-2000 10234 | 1.00 | EA | POT 2MEG OHM 1/4W MTC26L4 | MTC26L4 |
| | 43-12-0050 12097 | 2.00 | EA | HEX SPACER AL 6-32 X 1/2" LONG (8215-A-0632-17) | 8423 |

ITEM # : 99-98-0065 DESCRIPTION : HDB4-AT-CT SALES ORDER # : 02/89
MFG PART # : CS11-1038 DATE CREATED :
CUSTOMER :

| REF#/LN# | PART # / DATA3 # | QTY | UNIT | DESCRIPTION | MFG PART # |
|---|---|---|---|---|---|
| | 23-10-1200 | 1.00 | E | TOGGLE SWITCH 7565-K5 DPDT | 7565K5 |
| | 11063 | | | | |
| | 23-20-0100 | 1.00 | E | P27L RED PUSHBUTTON SWITCH | P27L-RED |
| | 11054 | | | | |
| | 23-10-1300 | 1.00 | EA | TOGGLE SWITCH 8821-K5 DPDT CEN | 8821K5,011-0018,2GM50,3-89672 |
| | 11066 | | | | |
| | 23-10-0100 | 1.00 | EA | TOGGLE SWITCH 7501-K13 SPST | 7501K13,7501K12,2FA53 |
| | 11064 | | | | |
| | 25-45-0500 | 1.00 | EA | TERM BLOCK 5 POS. (5-141) | 5-141 |
| | 11643 | | | | |
| | 25-45-0525 | 1.00 | EA | TERM BLOCK 5 POS MARKER STRIP | MS5-141 |
| | 11644 | | | (MS5-141) | |
| | 25-45-0001 | 2.00 | EA | TERM BLOCK JUMPER | 601-J |
| | 11691 | | | 601J | |
| | 25-50-0700 | 1.00 | EA | TERM STRIP 5 POS 2 OUTSIDE GRD | 55,KEYSTONE 824 |
| | 11688 | | | #55 | |
| | 25-50-0800 | 1.00 | EA | TERM STRIP 8 POS 2 OUTSIDE GRD | 56A,KEYSTONE 831 |
| | 11679 | | | #56A | |
| | 07-50-0200 | 1.00 | EA | RELAY TIME DELAY .5-5 SEC | KH121 |
| | 12897 | | | KH121 | |
| | 03-10-0050 | 1.00 | EA | POWERSTAT 2.25 A 270 VA | 10C,221 |
| | 13307 | | | 221/033-0522 10C | |
| | 99-99-0025-07 | 1.00 | EA | HV OUTPUT CABLE | |
| | 99-99-0025-12 | 1.00 | EA | HV PROBE TEST LEAD SET | |
| | 90-30-0193 | 1.00 | E | PCB FAB 30-193 REV D | |
| | 300193 | | | | |
| | 01-01-2400 | 1.00 | EA | CAP .1 mfd 400 V | WMF4P1 |
| | 10919 | | | WMF4P1 | |
| | 11-03-0300 | 3.00 | EA | LAMP, NEON NE-2 | NE-2 |
| | 10042 | | | | |
| | 21-02-2950 | 1.00 | EA | RESISTOR 220 K OHM 1/2 W 10% | |
| | 10360 | | | | |
| | 21-02-2700 | 1.00 | EA | RESISTOR 100 K OHM 1/2 W 10% | |
| | 10357 | | | | |
| | 20-05-1000 | 1.00 | EA | POT 50 K OHM 1/4 W | MTC54L4 |
| | 10230 | | | MTC54L4 OR EQUIV. | |
| | 05-50-0230 | 1.00 | E | SPARK GAP 230 V | SIEMENS B1-A230 |
| | 12092 | | | | |
| | 90-30-0519 | 1.00 | E | PCB FAB 30-519 REV B | |
| | 300519 | | | | |
| | 17-05-4007 | 1.00 | EA | SEMICOND DIODE 1 KV 1 A | 1N4007 |
| | 10803 | | | 1N4007 | |
| | 07-15-1500 | 1.00 | EA | RELAY DPDT 5 K | MKTC-2,MK6378,J6378,RE726 |
| | 11432 | | | | |

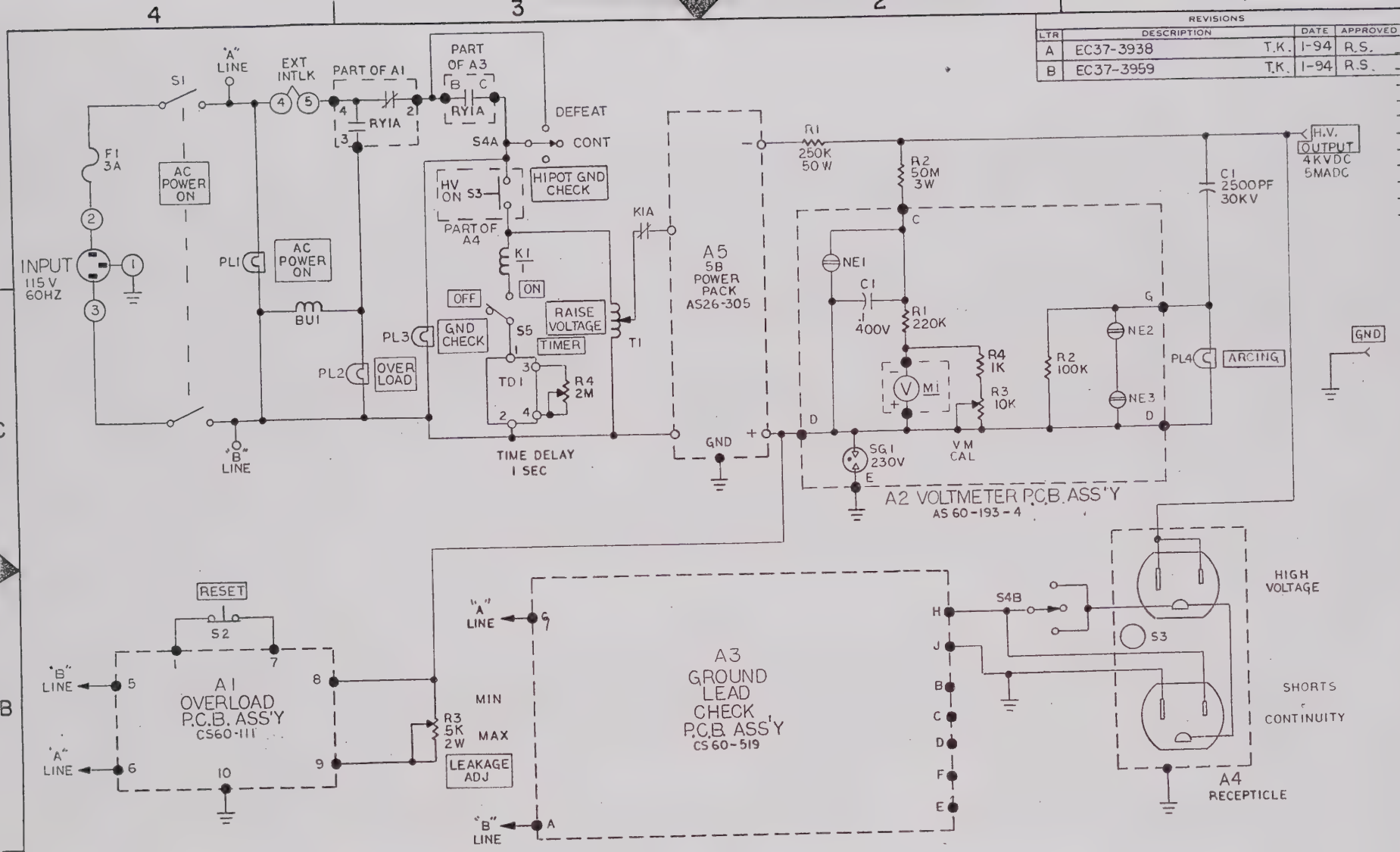
ITEM # : 99-98-0065
MFG PART # : CS11-1038

DESCRIPTION : HDB4-AT-CT

SALES ORDER # : 02/89
DATE CREATED :
CUSTOMER :

| REF#/LN# | PART # / DATA3 # | QTY | UNIT | DESCRIPTION | MFG PART # |
|---|---|---|---|---|---|
| | 21-40-1400 | 1.00 | EA | RESISTOR 1 K 25 W TAB TERM | |
| | 10532 | | | | |
| | 03-26-2110 | 1.00 | EA | XFMR 125-52 | 125-52 |
| | 13557 | | | 12.6V CT | |
| | 43-12-0050 | 4.00 | EA | HEX SPACER AL 6-32 X 1/2" LONG | 8423 |
| | 12097 | | | (8215-A-0632-17) | |
| | 17-05-5032 | 1.00 | EA | SEMICOND ZENER | 1N5032 |
| | 13504 | | | 1N5032 | |
| | 29-15-0500 | 1.00 | E | UNILET BOX ALUM. RED DOT | FS1/2,AFS1/2 |
| | 11144 | | | AFS-1 | |
| | 99-99-0500-14 | 1.00 | EA | UNIVERSAL FRONT PANEL | |
| | 29-10-0400 | 2.00 | E | RECEPT.15A 125V 3WIRE #5258 | 5258 |
| | 11124 | | | HUBBELL OR EXACT EQUAL | |
| | 23-20-0200 | 1.00 | EA | P27A BLK PUSHBUTTON SWITCH | P27A81K |
| | 11053 | | | | |
| | 45-26-0050 | 1.00 | EA | STRAIN RELIEF BUSHING 1/2" | 2521 |
| | 10965 | | | | |
| | 75-03-0126 | .25 | EA | AL SHEET 1/8" 5052-H32 | 1.746 LB/SQFT |
| | 12560 | | | 48"X 96" | |

| REVISIONS | | | |
|---|---|---|---|
| LTR | DESCRIPTION | DATE | APPROVED |
| A | EC37-3938 T.K. | 1-94 | R.S. |
| B | EC37-3959 T.K. | 1-94 | R.S. |




| QTY | DESCRIPTION | PART NO. | MAT'L OR NOTE | ITEM |
|---|---|---|---|---|
| | DC HIPOT TESTER | | | |

Hipotronics
BREWSTER, N.Y.

| | | | |
|---|---|---|---|
| MAT'L | NEXT ASSY | MODEL NO HDB4-AT-CT | |
| FINISH | UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES | DRAWN KEN R 8/86 | DWG NO. CS11-1038 REV B |
| | FRACTIONS ± 1/64 DECIMALS ± 005 ANGLES ± 30' | CHECKED | SCALE SHT 1 OF 1 |
| | | APPROVED | |

(JBL)

HIPOTRONICS, INC.

DATE 01/19/95



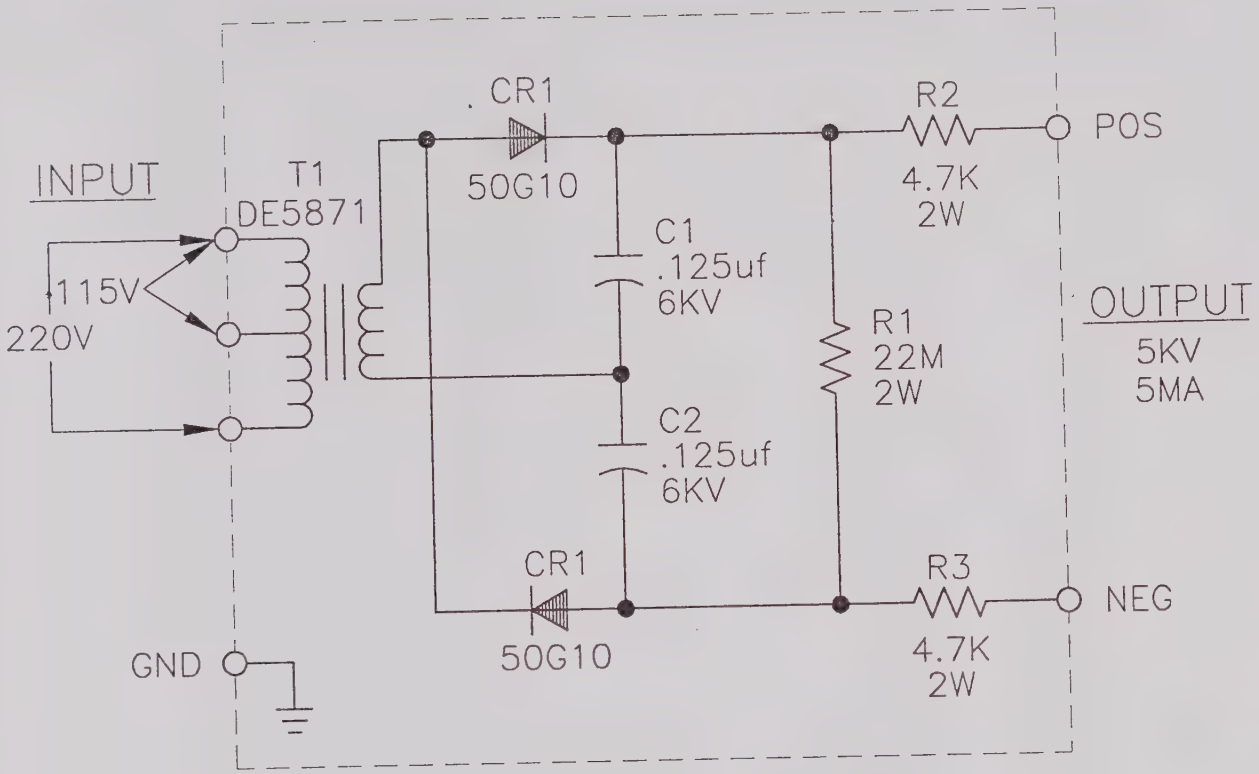
ITEM # : 99-98-0160
MFG PART # : AS26-305

DESCRIPTION : 5B POWER PACK

SALES ORDER # :
DATE CREATED :
CUSTOMER :

| REF#/LN# | PART # / DATA3 # | QTY | UNIT | DESCRIPTION | MFG PART # |
|---|---|---|---|---|---|
| C1,2 | PWO-661-P310 | 1.00 | EA | 2X.125 UF @ 6 KV CAP | |
| CR1,2 | 17-03-4200 10800 | 2.00 | EA | RECTIFIER 10 KV 50.0 MIL 50G10 | 50G10,DL1000,G10FS |
| R1 | 21-06-2100 10482 | 1.00 | EA | RESISTOR 22 MEG 2 W 10% | |
| R2,3 | 21-06-2000 10480 | 2.00 | EA | RESISTOR 4.7 MEG 2 W 10% | |
| T1, | 03-99-5871 | 1.00 | EA | DE5871 | 5 B PWR PACK |
| | 09-10-0100 10955 | 3.00 | EA | BUSH., FEED-THRU TEFLON | 601TH |
| | 09-10-0500 10962 | 2.00 | EA | BUSH. FEED-THRU 8-32 TAP | 4862T8-32X1/2 |
| | 87-70-0250 15765 | 1.00 | EA | CAN,COVER #4 - P/N 7495CA APPROX. 3.3"X 3.9"-HOT TIN | 7495CA |
| | 87-70-0200 15764 | 1.00 | EA | CAN #4 - P/N HU7495 W/STUDS MOD.TO DWG.#2634-8, 4.25" HIGH | HU7495/2634-8 |
| | 65-10-1001 13467 | .85 | EA | EPOXY RESIN GREEN E676A 5 GALLON (64 POUND) | E676A |
| | 65-15-0010 14082 | .85 | LB | EPOXY CATALYST C-190A (49-182) 5 GALLON (32 POUND) | C-190A(49-182) |

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
| | A | EC-161P | 6/92 | L.W. |




# POWER PACK

Hipotronics
BREWSTER, NY

| NEXT ASS'Y | | MODEL NO. 5B | | | |
|---|---|---|---|---|---|
| UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES | | DRAWN WJN | DATE 4-92 | DWG NO. AS26-305 | REV. A |
| | | CHECKED LW | 4-92 | | |
| FRACTIONS ±1/64 | DECIMALS ±.005 | ANGLES 30° | APPROVED JHW | 4-92 | SCALE NA | SHT 1 OF 1 |

FILE NAME: A26305A [126-61AMIL]

DATE: 2/17/94

DATE 01/19/95

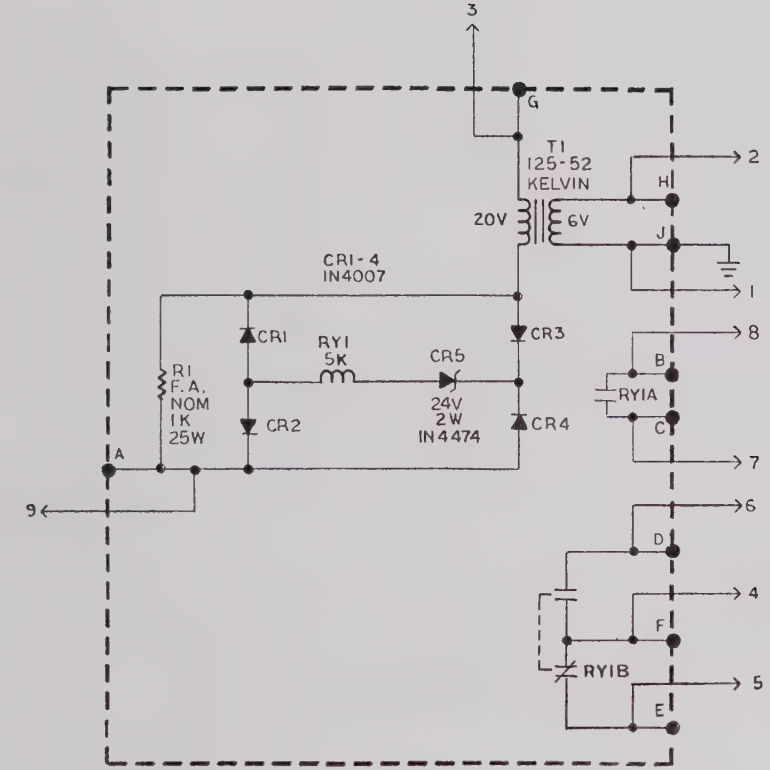
ITEM # : 19-99-0519
MFG PART # : CS60-519

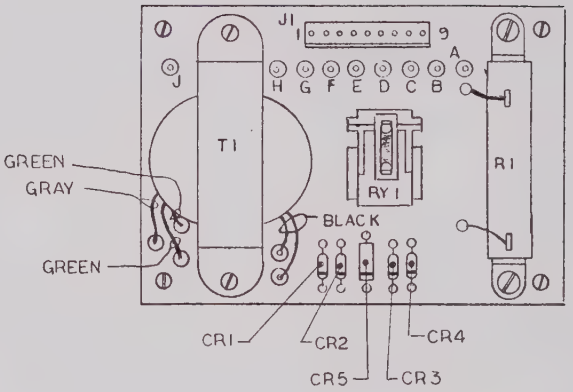
DESCRIPTION : SUBASSEMBLY,CONTINUITY CIRCUIT

SALES ORDER # :
DATE CREATED : 10/07/92
CUSTOMER :

| REF#/LN# | PART # / DATA3 # | QTY | UNIT | DESCRIPTION | MFG PART # |
|---|---|---|---|---|---|
| PCB | 90-30-0519<br>300519 | 1.00 | EA | PCB FAB 30-519 REV B | |
| CR1-4 | 17-05-4007<br>10803 | 4.00 | EA | SEMICOND DIODE 1 KV 1 A<br>1N4007 | 1N4007 |
| CR5 | 17-05-5032<br>13504 | 1.00 | EA | SEMICOND ZENER<br>1N5032 | 1N5032 |
| J1 | 24-06-1091<br>11366 | 1.00 | EA | MOLEX CONN, 9 PIN<br>09-65-1091 | 09-65-1091 |
| P1 | 24-04-2095<br>11349 | 1.00 | EA | MOLEX CONN 9 PIN<br>09-06-2095 | 09-06-2095 |
| R1 | 21-40-1400<br>10532 | 1.00 | EA | RESISTOR 1 K 25 W TAB TERM | |
| | 45-12-1025<br>11993 | 2.00 | EA | BRACKET,RESISTOR FOR 25W<br>CLAROSTAT #K100, WL826 | K100 |
| T1 | 03-26-2110<br>13557 | 1.00 | EA | XFMR 125-52<br>12.6V CT | 125-52 |
| | | | | MISCELLANEOUS<br>---------- | |
| | 43-12-0050<br>12097 | 4.00 | EA | HEX SPACER AL 6-32 X 1/2" LONG<br>(8215-A-0632-17) | 8423 |

| REVISIONS | | | | |
|---|---|---|---|---|
| LTR | DESCRIPTION | | DATE | APPROVED |
| A | EC37-2230 | KR | 1-85 | |
| B | EC37-2935 | KR | 1-89 | |



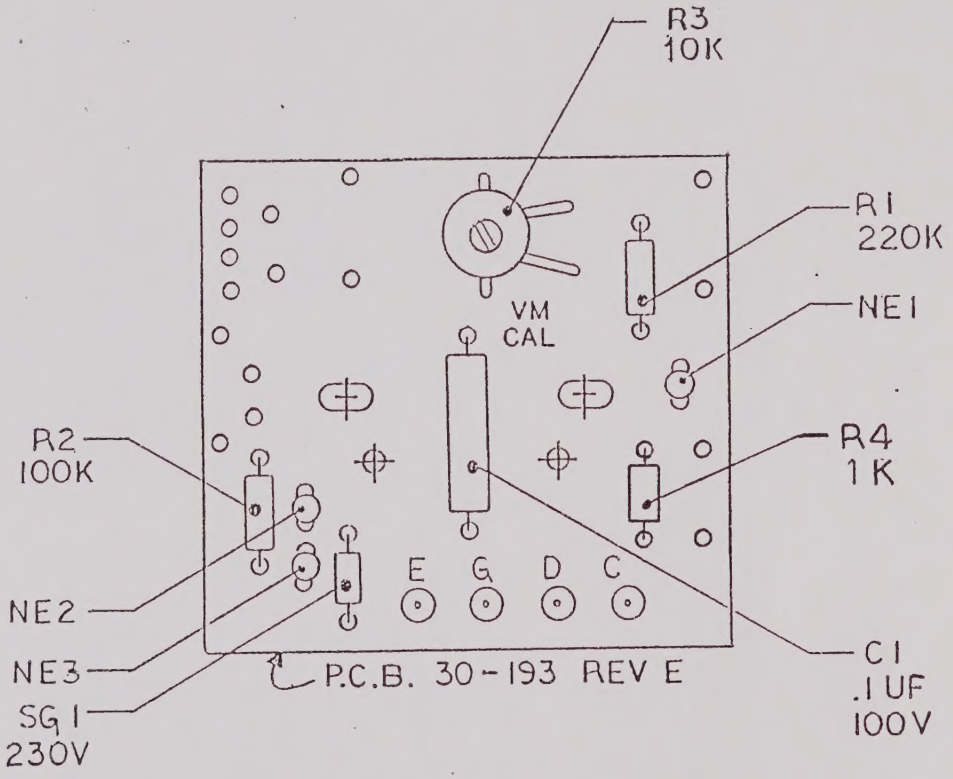

| QTY | DESCRIPTION | PART NO. | MAT'L OR NOTE | ITEM |
|---|---|---|---|---|
| | GROUND LEAD CHECK | | | |

Hipotronics
BREWSTER, N.Y.

| | | | | |
|---|---|---|---|---|
| MAT'L | NEXT ASSY | | MODEL NO | |
| FINISH | UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES | DRAWN KEN R | DATE 1-89 | DWG NO. CS60-519 REV B |
| | FRACTIONS ±1/64 \| DECIMALS ±.005 \| ANGLES ±30' | CHECKED | | SCALE SHT 1 OF 1 |
| | | APPROVED | | |

| USED IN MODELS | |
|---|---|
| HDB4-AT | |
| HDB4-AT-C | |
| HDB4-AT-CT | |
| | |
| | |

| REVISIONS | | | |
|---|---|---|---|
| LTR | DESCRIPTION | DATE | APPROVED |
| A | EC37-3938 T.K. | 1-94 | R.S. |




## NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL RESISTORS ARE 1/2 W, ± 10%

# VOLTMETER P.C.B ASS'Y

HIPOTRONICS
BREWSTER, N.Y.

| | | | | | |
|---|---|---|---|---|---|
| NEXT ASSY | | MODEL NO. NOTED | | | |
| UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES DO NOT SCALE DWG TOLERANCES | | DRAWN J.VARVARA | DATE 8-86 | DWG NO. AS60-193-4 | REV. A |
| | | CHECKED | | | |
| FRACTIONS ± 1/64 | DECIMALS ± .005 | ANGLES ±30' | APPROVED | 8/86 | SCALE FULL | SHT 1 OF 1 |

MP MASTER
MA35493